Project Baseline Summary Report

Data Source: **EM CDB**
Report Number: **GEN-01b**
Operations/Field Office: **Oak Ridge**
Print Date: **3/9/2000**
Site Summary Level: **Oak Ridge Reservation**
HQ ID: **0093**
Project **OR-311 / ORNL Waste Operations - Def**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

This PBS covers the Waste Operations activities at the Oak Ridge National Laboratory (ORNL). The facilities and activities include: ORNL Liquid Low Level Waste (LLLW) - This scope covers the work required to support routine operations and maintenance of the liquid low-level waste (LLLW) system at ORNL. The work scope includes all activities required to collect and treat newly generated LLLW and stored legacy LLLW in a manner, which ensures protection of the health and safety of the workers, the general public, and the environment. The ORNL LLLW System includes operation and maintenance of the following major facilities: LLLW Evaporator Facility; Melton Valley Storage Tank Facility (MVST); Transported Waste Receiving Facility; Bethel Valley and Melton Valley Monitoring and Control Stations; the LLLW Solidification Facility; LLLW tanker operations; and the LLLW collection and transfer system (tanks and pipelines).

ORNL Gaseous Waste Operations (GW) - This scope covers the work required to support routine operations and maintenance of the gaseous waste (GW) system at ORNL. The work scope includes all activities required to provide continuous routine transfer and treatment of slightly contaminated radioactive GW in a manner which ensures protection of the health and safety of the workers, the general public, and the environment. The ORNL GW System includes operation and maintenance of the following major facilities: 3039 Stack, Hot Off-Gas Scrubber (3092), and the cell ventilation and hot off-gas collection and transfer piping and ducts. The 3039 Stack and the Off-Gas Scrubber are radiological facilities whose operations are subject to the Price-Anderson Amendment Act.

ORNL Process Waste Operations (PW) - This scope covers the work required to support routine operations and maintenance of the process waste (PW) system ORNL. The work scope includes all activities required to collect and treat process and nonradiological wastewater in a manner which ensures the protection of the health and safety of the workers and the general public as well as the protection of the environment. The ORNL PW System includes operation and maintenance of the following major facilities: Process Waste Treatment Complex (Buildings 3544 and 3608), Bethel Valley Collection Tanks, Melton Valley Collection Tanks, PW tanker operations, and the process waste and nonradiological waste collection and transfer systems (piping, manholes, etc.).

Out-of-Tank Evaporation (OTE) - This activity provides partial (split funded between Waste Management-EM 30 and Technology Development-EM 50) support for integrated operation of the Solid Liquid Separator (SLS), Cesium Removal System (CRS), and Out of Tank Evaporation (OTE) Systems, which will be operated to reduce the volume, solids content, and cesium-137 concentration of waste transferred from the MVSTs to the new LLLW tanks. Includes regulatory compliant operation of the SLS, CRS, and OTE Systems with a nominal goal of annually treating 25,000 gallons of MVST waste for each of five (5) campaigns.

Chemical Detonation Facility - This scope covers the work required to support routine operation and maintenance of the Chemical Detonation Facility (7667) at Oak Ridge National Laboratory (ORNL). The work scope includes all activities required to ensure safe and compliant treatment of explosive and/or shock sensitive waste through detonation. Because of their intrinsically hazardous nature and the prohibitive costs involved, these materials cannot be shipped to or accepted by off-site vendors; therefore, they are currently detonated in the Chemical Waste Detonation Facility.

Project Status in FY 2006:

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Project Description Narratives

In FY 2006, ORNL Waste Operations will be continuing ongoing Waste Treatment Operations at and the Liquid Low Level Waste System, the Gaseous Waste System, the Process Waste System. These operations will support both Legacy Waste and Newly Generated Waste.

Post-2006 Project Scope:

Beyond FY 2006 ORNL Waste Operations will continue ongoing operations in support of Legacy Waste and Newly Generated Waste.

Project End State

The ORNL Waste Operations EM Mission of treating legacy, EM newly generated waste and non-EM newly generated waste will continue until all ORNL legacy waste and EM newly generated waste is dispositioned. When this EM mission is completed, the facilities will continue to operate in support of the Energy Research Programs.

Cost Baseline Comments:

This PBS costs are based on extrapolation estimates. Extrapolation estimates are derived from historical cost data and based on a required level of effort to perform a task and upon a historical production quantity. One example of an extrapolation estimate used in this PBS is an estimate for the operation of a waste handling facility. In this example, the only available data is the quantity of wastes handled per year and some historical costs for the different sub-operations of the facility over a given duration. To prepare a new estimate for planned out-year operations, extrapolations of these actual costs are adjusted with logic from more recent cost trends and the Managing & Integrating Contractor approach/expectations.

Safety & Health Hazards:

The most common environment, safety, and health issues are associated with handling material that is contaminated; radiological or chemical, or the handling of chemicals. Mishandling of these materials may cause an employee contamination, equipment contamination, or an environmental insult such as excess emissions or a release. This activity also includes hazards such as the operation of heavy equipment, hoisting and rigging, manually handling (ergonomics), pinch points, slips - trips - and falls, and the use of hand and portable power tools. The chemicals themselves (i.e. sodium hydroxide, hydrogen peroxide, and sulfuric acid) may also pose a hazard to the employee, the public, or the environment.

Safety & Health Work Performance:

These activities are controlled by developing procedures that are in compliance with applicable permits and laws. In addition, pre-job briefings, Radiological Work Permits (RWP), and an Integrated Safety Management System are used to as work control documents. A primary controller for these to work effectively is employee feedback.

PBS Comments:

Baseline Validation Narrative:

The Oak Ridge Operations Office Environmental Management Life Cycle Baseline (LCB) was submitted by the Managing and Integrating Contractor, Bechtel Jacobs Company LLC, to DOE-ORO on April 1, 1999. The final draft LCB will be submitted to DOE-ORO on June 1, 1999 after formal receipt and incorporation of comments. A validation of the baseline is in process using an independent contractor to DOE-ORO. The validation will be ongoing until complete and the final validation report is scheduled to be issued on June 25, 1999.

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General PBS Information

Project Validated? **Date Validated:**

Has Headquarters reviewed and approved project? No

Date Project was Added: 3/10/1999

Baseline Submission Date: 7/1/1999

FEDPLAN Project? Yes

Drivers:

CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
N	N	N	N	N	Y	Y	N

Project Identification Information

DOE Project Manager: Clayton Gist

DOE Project Manager Phone Number: 423-576-6821

DOE Project Manager Fax Number: 423-576-6074

DOE Project Manager e-mail address: gistcs@oro.doe.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	152,973	1,548,655	1,701,628	38,818	35,393	16,365	16,238	17,630	11,093	11,048	11,275	11,521	11,757	12,013	11,453
PBS Baseline (constant 1999 dollars)	146,575	634,207	780,782	38,818	35,393	16,365	16,238	17,630	10,865	10,598	10,593	10,602	10,597	10,605	9,902
PBS EM Baseline (current year dollars)	152,973	0	152,973	38,818	35,393	16,365	16,238	17,630	11,093	11,048	11,275	11,521	11,757	12,013	11,453

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Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS EM Baseline (constant 1999 dollars)	146,575	0	146,575	38,818	35,393	16,365	16,238	17,630	10,865	10,598	10,593	10,602	10,597	10,605	9,902

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	11,694	11,939	12,190	12,446	66,175	73,516	81,566	90,498	100,408	111,403	123,602	137,137	152,154	168,815	187,301	207,811
PBS Baseline (constant 1999 dollars)	9,903	9,902	9,903	9,903	49,491	49,555	49,555	49,555	49,555	49,555	49,555	49,555	49,555	49,555	49,555	49,555
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Non-EM Costs included in the Cost Baseline

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Non-EM Category: Newly Generated													
DOE - Unspecified Office											100	100	100

	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
Non-EM Category: Newly Generated													
DOE - Unspecified Office	100	100	100	100	100	100	100	100	100	100	100	100	100

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009

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Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project:

Current Projected End Date of Project: 9/30/2070

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):		**Actual 1997 Cost:** 35,393	**Actual 1998 Cost:** 16,238
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	-51,631	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**	-1,394
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	-53,025		

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	-53,025	

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Project Reconciliation

Additional Amount to Reconcile (+):	144,417
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	**91,392**

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
ORNL Waste Operations Project Start	OR311-001		10/1/1996								
ORNL Waste Operations Project End	OR311-002		9/30/2070								
ORNL Waste Operations EM Mission Complete	OR311-003		9/30/2012								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
ORNL Waste Operations Project Start	OR311-001			Y							Project Start Milestone
ORNL Waste Operations Project End	OR311-002				Y						ORNL Waste Operations Project End Milestone
ORNL Waste Operations EM Mission Complete	OR311-003					Y					

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 200
LLW														
Treatment	M3	17,979.60	127,680.00	145,659.60	0.00		0.00	1,960.00	2,051.60	1,998.00	1,995.00	1,995.00	1,995.00	1,995.(
LLW														
Storage	M3							0.00	0.00	0.00	0.00	0.00	0.00	0.(

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Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 20(
LLW														
On-Site Disp.	M3	0.00	0.00	0.00	0.00		0.00							
LLW														
Comm. Disp.	M3	0.00	0.00	0.00	0.00		0.00							
LLW														
Ship to DOE Disp.	M3	3,055.00	31,232.00	34,287.00	0.00		0.00	0.00	0.00	127.00	488.00	488.00	488.00	488.(
Tech.														
Deployed	Ntd	2.00	0.00	2.00					2.00					

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
LLW													
Treatment	M3	1,995.00	1,995.00	1,995.00	1,995.00	1,995.00	1,995.00	1,995.00	9,975.00	9,975.00	9,975.00	9,975.00	9,975.00
LLW													
Storage	M3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LLW													
On-Site Disp.	M3												
LLW													
Comm. Disp.	M3												
LLW													
Ship to DOE Disp.	M3	488.00	488.00	488.00	488.00	488.00	488.00	488.00	2,440.00	2,440.00	2,440.00	2,440.00	2,440.00
Tech.													
Deployed	Ntd												

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Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
LLW Treatment	M3	9,975.00	9,975.00	9,975.00	9,975.00	9,975.00	9,975.00	9,975.00		143,713.00
LLW Storage	M3	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
LLW On-Site Disp.	M3									85.00
LLW Comm. Disp.	M3									0.00
LLW Ship to DOE Disp.	M3	2,440.00	2,440.00	2,440.00	2,440.00	2,440.00	2,440.00	2,440.00		34,287.00
Tech. Deployed	Ntd								2.00	2.00

Technology Needs

Site Need Code: ORWM-10

Site Need Name: Removal of RCRA Metals from Aqueous Waste

Focus Area Work Package ID: MW-08

Focus Area Work Package: Facilitating Deployment for Unique Wastes

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Mercury Contamination - Separate and Remove Mercury using Sorbent Process	0	

Technology Needs

Site Need Code: ORWM-24

Site Need Name: Better Methods for Monitoring Discharge Limits

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: ORWM-26

Site Need Name: Discrimination Between WIPP Defined TRU and Non-WIPP Defined Isotopes in TRU Waste

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: ORTK-01

Site Need Name: Tank Waste Characterization

Focus Area Work Package ID: WT-03-01 **Focus Area Work Package:** Tank Integrity and Heel Retrieval

Focus Area: TFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Light Duty Utility Arm	0	

Technology Needs

Topographical Mapping System (TMS)/Laser Range Finder (LRF) 0

Site Need Code: ORTK-03

Site Need Name: Sludge Mixing and Mobilization

Focus Area Work Package ID: WT-02-01 **Focus Area Work Package:** Waste Mobilization and Retrieval

Focus Area: TFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
AEA Fluidic Pulse Jet Mixer	0	

Site Need Code: ORTK-05

Site Need Name: Tank Sludge and Supernatant Separations

Focus Area Work Package ID: WT-08-01 **Focus Area Work Package:** Solids Pretreatment

Focus Area: TFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Crossflow Filtration	0	

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Technology Needs

Site Need Code: ORTK-11

Site Need Name: Tank Supernatant Pretreatment

Focus Area Work Package ID: WT-09-01 **Focus Area Work Package:** Radionuclide Removal

Focus Area: TFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Out of Tank Evaporator	0	
Cesium Removal Using Crystalline Silicotitanate	0	

Site Need Code: ORTK-06

Site Need Name: Tank Sludge and Supernatant Immobilization

Focus Area Work Package ID: WT-02-01 **Focus Area Work Package:** Waste Mobilization and Retrieval

Focus Area: TFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Low Activity Waste Forms	0	

Technology Deployments

	Deployment Year		
Deployment Status	**Planned**	**Forecast**	**Actual Date**

Technology Name: Cesium Removal Using Crystalline Silicotitanate

Deployment Commitment	1999		

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Technology Deployments

	Deployment Year		
Deployment Status	**Planned**	**Forecast**	**Actual Date**
Technology Name: Crossflow Filtration			
Deployment Commitment	1999		